



RDMS DocID

108149



Geotechnical
Environmental and
Water Resources
Engineering

RCRA RECORDS CENTER
FACILITY MacDermid Inc
I.D. NO. CTD001164599
FILE LOC. R-13
OTHER # 108149

Interim Measures Work Plan AOC A Soil Piles

MacDermid Incorporated

526 Huntingdon Avenue
Waterbury, Connecticut

USEPA ID# CTD001164599

Permit # DEP/HWM/CS-151-001

Submitted to:

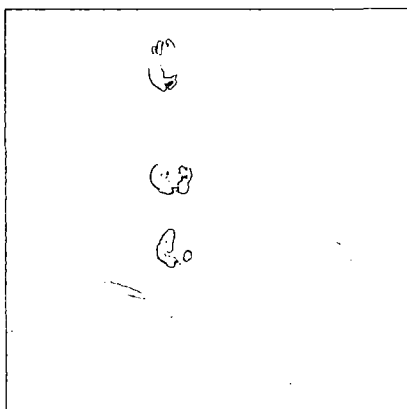
John Cordani
General Counsel/Corporate Secretary
MacDermid Incorporated
245 Freight Street
Waterbury, CT 06702

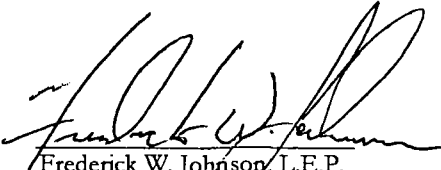
Submitted by:

GEI Consultants, Inc.
455 Winding Brook Drive, Suite 201
Glastonbury, CT 06033
860-368-5300

December 2009

Project #073290-*-1004




Frederick W. Johnson, L.E.P.
Sr. Vice President

LETTER OF TRANSMITTAL

455 Winding Brook Drive, Suite 201
Glastonbury, CT 06033
Phone: (860) 368-5300 Fax: (860) 368-5307
www.geiconsultants.com

| | |
|---|--|
| To: Carolyn Casey United States Department of Environmental Protection – Region 1 1 Congress Street, Suite 1100 Boston, MA 02144-2023 | Date: December 1, 2009 Project No. 073290-1004 Re: Interim Measures Work Plan AOC A Soil Piles MacDermid Incorporated |
| To: Dave Ringquist, Sanitary Engineer 3 Waste Management Bureau Waste Engineering and Enforcement Division State of Connecticut Department of Environmental Protection 79 Elm Street Hartford, Connecticut 06106-5127 | Date: December 1, 2009 Project No. 073290-1004 Re: MacDermid Incorporated |

We are sending you the following enclosures:

| No. | Type | Description |
|-----|-----------|--|
| 1 | Hard Copy | Interim Measures Work Plan AOC A Soil Piles – MacDermid Incorporated |

These are transmitted as checked below:

☐ For Approval ☒ For Your Use ☐ For Review/Comment ☐ As Requested ☐ Other

Message:

Copy to: Richard Nave – MacDermid Incorporated

Signed:  Fred Johnson

If enclosures are not as noted, kindly notify us at once.

Table of Contents

| | |
|---|-----------|
| Abbreviations and Acronyms | iv |
| 1. Introduction | 1 |
| 2. Site Background | 3 |
| 2.1 Site Background and History | 3 |
| 2.2 Summary of Site Contamination and Compliance | 3 |
| 3. Local Environment and Potential Receptors | 4 |
| 3.1 Surface Water Classification | 4 |
| 3.2 Groundwater Classification | 4 |
| 3.3 Water Supply | 4 |
| 3.4 Geology | 5 |
| 3.4.1 Surficial | 5 |
| 3.4.2 Bedrock | 5 |
| 4. IM Objectives | 6 |
| 4.1 Soil Standards | 6 |
| 4.2 Groundwater Standards | 6 |
| 5. IM Description | 8 |
| 5.1 Description of IM | 8 |
| 5.2 Remediation Process | 8 |
| 5.3 Confirmation Sampling and Analysis | 9 |
| 5.3.1 Requirements | 9 |
| 5.3.2 Procedures | 9 |
| 5.3.2 Quality Assurance/Quality Control (QA/QC) | 10 |
| 5.3.2.1 Field Blanks | 10 |
| 5.3.2.2 Equipment Blanks | 10 |
| 5.3.2.3 Trip Blanks | 10 |
| 5.4 Groundwater Monitoring | 10 |
| 6. Remediation Implementation | 11 |
| 6.1 Notification | 11 |
| 6.2 Permits and Approvals | 11 |
| 6.3 Regulatory Compliance | 11 |
| 6.4 Health and Safety | 11 |
| 6.5 Soil Storage | 11 |
| 6.6 Waste Management | 12 |

| | | |
|-----------|------------------------------|-----------|
| 6.7 | Groundwater Dewatering | 12 |
| 6.8 | Contractor Work Plan | 12 |
| 6.9 | Erosion and Sediment Control | 12 |
| 6.10 | Decontamination | 12 |
| 6.11 | Site Restoration | 12 |
| 6.12 | IM Documentation | 13 |
| 6.12.1 | Field Oversight | 13 |
| 6.12.2 | IM Report | 13 |
| 7. | Schedule | 14 |

Table of Contents (cont.)

Tables

- 1 Summary of Soil Pile Sampling – AOC A

Figures

- 1 Interim Measures Work Plan - AOC A Soil Piles

Abbreviations and Acronyms

| | |
|----------|---|
| AOC | Area of Concern |
| CTDEP | Connecticut Department of Environmental Protection |
| CFR | Code for Federal Regulations |
| CGS | Connecticut General Statutes |
| EDR | Environmental Data Resources, Inc. |
| ELUR | Environmental Land Use Restriction |
| EPA | United States Environmental Protection Agency |
| GB PMC | Pollutant Mobility Criteria |
| GEI | GEI Consultants, Inc. |
| GWPC | Groundwater Protection Criteria |
| HASP | Health and Safety Plan |
| IC/DEC | Industrial Commerical Direct Exposure |
| IC/GWVC | Industrial Commerical Groundwater Volatilization Criteria |
| IM | Interim Measures |
| LEA | Loureiro Engineering Associates |
| LUST | Leaking Underground Storage Tank |
| OSHA | Occupational Safety and Health Administration |
| PCBs | Polychlorinated Biphenyls |
| PCE | Tetrachloroethylene |
| PID | Photoionization Detector |
| QAAP | Quality Assurance Project Plan |
| QA/QC | Quality Assurance/Quality Control |
| QC | Quality Control |
| RAP | Remedial Action Plan |
| RCRA | Resource Conservation Recovery Act |
| RCSA | Regulations of Connecticut State Agencies |
| RES DEC | Residential Direct Exposure Criteria |
| RES GWVC | Residential Groundwater Volatilization Criteira |
| RSRs | Remediation Standard Regulations |
| SS | Stainless Steel |
| SWPC | Surface Water Protection Criteria |
| SVOC | Semivolatile Organic Compound |
| SWMU | Solid Waste Management Unit |
| TCA | Trichloroethane |
| TCE | Trichloroethylene |
| TCLP | Toxicity Characteristics Leaching Procedure |
| TRC | TRC Company, Inc. |
| TSDF | Treatment, Storage, And/Or Disposal Facilities |
| VOC | Volatile Organic Compound |
| WWTS | Wastewater Treatment System |

Measurements

| | |
|-----------------|-------------------------|
| deg f | Degrees Fahrenheit |
| ft ² | Feet squared |
| mg/kg | Milligrams per kilogram |
| ppm | Parts per million |
| mg/L | Milligrams per liter |
| mm/sec | Millimeters per second |
| S.U. | Standard Units |

1. Introduction

GEI Consultants, Inc. (GEI) has been retained by the MacDermid Inc. to complete this Interim Measures (IM) Work Plan for MacDermid's Huntingdon Avenue facility (Site) located at 526 Huntingdon Avenue in Waterbury, Connecticut. The site location is depicted in Figure 1.

This IM Work Plan is being conducted pursuant to the conditions provided in The September 2007 Stewardship Permit # DEP/HWM/CS-151-001 (the Permit).

This IM Work Plan is for AOC A, Soil Piles located on the northern parcel of the site. We recommend these piles be removed and disposed of as part of an interim remedial action in our Site Characterization Report dated September 2009.

This IM Work Plan contains information regarding the Site background (Section 2), a description of the local environment and potential receptors (Section 3), a summary of Site contamination and Remediation Standard Regulation (RSR) compliance (Section 4), a description of the recommended remedial alternative (Section 5), a description of actions required to implement the remedial actions (Section 6), and the schedule for remedial action (Section 7).

The Site includes two parcels of land separated by Huntingdon Avenue. The first parcel, located on the southern side of Huntingdon Avenue, encompasses approximately 11 acres and is referenced as the main Huntingdon Avenue facility or South Parcel. This parcel contains three interconnected buildings with a total footprint of approximately 182,500 square feet. Individually these buildings are referred to as the Gear Street Building, East Aurora Street Building, and the Huntingdon Avenue Building (Figure 2). According to historical research, the Huntingdon Avenue Building and Gear Street Building were built prior to 1921. The East Aurora Building, connecting the two other buildings, was built in the 1980s.

The second parcel, located to the north of Huntingdon Avenue, encompasses approximately 30 acres and is referenced as the North Parcel. The North Parcel is where the AOC A Soil Piles, that are the subject of this IM, are located. The North Parcel is primarily covered with native vegetation. Two paved areas are located in the southern and southeastern portions of the North Parcel. The first paved area is located immediately along the north side of Huntingdon Avenue and was used for parking by employees of the MacDermid facility. The second paved area, located approximately 400 feet north of Huntingdon Avenue, serves as an asphalt cap to a former impacted soil disposal area. This asphalt-capped area and the soil piles, constitutes AOC-A.

Earliest records indicate the first parcel of the Site was owned by the Metal Specialty Company. Documentation of the first parcel manufacturing products or dates of operation have not been found. Property records indicate that prior to 1916, the Waterbury Steel Ball Company occupied the Gear Street Building, and the Carroll Wire Company occupied the Huntingdon Avenue Building. From 1916 to 1928, both buildings were owned and operated by the Waterbury Steel Ball Company (City of Waterbury, 2008). MacDermid began manufacturing operations at the Site from 1930 to 2002. MacDermid leased the property from the Waterbury Steel Ball company from 1928 to 1950. MacDermid purchased the property in 1950.

Aerial photography indicates a lagoon was added between 1970 and 1975 west of the Huntingdon Avenue Building. This lagoon and a second adjacent lagoon were used for the disposal of organic and inorganic process waste. The lagoons were removed between approximately 1980 and 1986, and the East Aurora Street Building was constructed to connect the two existing buildings.

The Site remained generally unchanged from 1986 to 2002. MacDermid ceased industrial operations at the Site on December 31, 2003. A portion of the East Aurora Street Building had been rented for commercial storage of electrical equipment but is currently unoccupied.

A more complete history of the Site is presented in the April 2008 Site Characterization Work Plan. The site characterization results are presented in the September 2009 Site Characterization Report. Both documents were prepared by GEI for MacDermid.

2. Site Background

2.1 Site Background and History

AOC- A is located within the North Parcel and includes the AOC A-Soil Piles, the subject of this IM work plan, and the material located under the asphalt cap. Current photographs of the AOC A Soil Piles are provided in Figure 1.

According to the TRC Company, Inc. (TRC), approximately 1,000 cubic yards of potentially contaminated soil was excavated from the former metal hydroxide waste lagoons (AOC-E1) and were deposited in AOC-A in the late 1970s (TRC, 1993). The Industrial Pollution Control Corporation reported material removed from the closed waste lagoons was mixed with sand and gravel to improve its load-bearing characteristics (IPC, 1986). According to this report, the material was placed in AOC-A and covered with clean fill. This layer of clean fill, of variable depths, was covered with nine inches of processed aggregate and three inches of bituminous asphalt in 1986.

The origins of the AOC A-Soil Piles in the vicinity of the capped area are not known. Samples were collected to characterize the soil to assess the need for off-site disposal.

2.2 Summary of Site Contamination and Compliance

Five soil samples (SB-1 through SB-5) were collected from the AOC A –Soil Piles in November of 2008. The samples were collected in accordance with the methods described in the Work Plan. No staining or odors were observed. Each pile was screened for volatile organic vapors using a photoionization detector (PID). No detections of organic vapors were recorded.

The results of the soil sampling are provided in Figure 1 and Table 1. Analytical results for SB-4 suggest the soil meet the Connecticut Department of Environmental Protection (CTDEP) definition for clean fill. Soil Samples SB-1, -2, -3 and -5, however, contained elevated concentrations of metals (arsenic or lead) and petroleum. At least one parameter exceeded Residential Direct Exposure Criteria (RES DEC) from each of the four piles. These soils meet the definition of polluted fill and are subject to use restrictions based on CTDEP's current Solid Waste Regulations.

SB-5 was analyzed for hazardous waste characterization. Results indicated the material does not meet the characteristic hazardous waste criteria as stated in the federal Resource Conservation and Recovery Act of 1976 (42 USC 6901 et seq.). Low concentrations of trichloroethylene (TCE), acetone, and polychlorinated biphenyls (PCBs) were detected.

3. Local Environment and Potential Receptors

3.1 Surface Water Classification

The Site slopes to the southeast and towards the Naugatuck River. Surface runoff from the Site flows into catch basins and is conveyed to Steele Brooke located approximately 900 feet to the southwest. Steele Brooke joins the Naugatuck River approximately 1,000 feet to the South. The Naugatuck River is classified "C/B" by the CTDEP, indicating that the water quality in the river is impaired. The federal emergency management agency flood insurance rate maps for Waterbury indicate that MacDermid is located in Zone C, not prone to flooding.

3.2 Groundwater Classification

Depth to groundwater varies dramatically between the North and South Parcel. The North Parcel contains groundwater less than five feet below ground surface. Groundwater generally flows south towards Huntingdon Avenue.

The South Parcel has groundwater at a depth of between 30 to 40 feet below ground surface. Groundwater in the shallow overburden generally flows in a south-southeasterly direction towards the Naugatuck River.

Groundwater in this area is classified as GB, indicating that some level of impacts are probable and would require treatment before being used as a public water supply (CTDEP, 1987).

The Site and surrounding properties have public water available through the Aquarian Water Company. A receptor survey was conducted by Loureiro Engineering Associates, Inc. (LEA) as part of their "*Current Human Exposures under Control*" document (LEA, 2005). They researched the findings of a previous receptor survey conducted by HRP, Inc. in 2001. This 2001 document stated that several water supply wells existed within a one-mile radius of the Site. LEA's report indicated that all of these wells are used for industrial purposes and not for potable water supply (LEA, 2005).

3.3 Water Supply

There is no water supply located on the North Parcel. The South Parcel is on public water supply, provided by the city of Waterbury.

3.4 Geology

3.4.1 Surficial

The 1992 United States Geological Survey (USGS) Surficial Materials Map of Connecticut depicts surficial materials as consisting of alluvium overlying sand. The unconsolidated vadose zone soils beneath the Site range from grey brown and brown, fine to coarse sand with traces of gravel; a fill layer consisting of medium to coarse sand and building debris was identified in some boring locations to depths of approximately five feet below grade; to heterogeneous glacial outwash material (sub-rounded cobbles, gravels, and coarse-grained sand). These vadose zone deposits overlie a very uniform deposit of fine to very fine sand and silt that was encountered at a depth of approximately 17 to 60 feet below ground surface.

3.4.2 Bedrock

According to the 1967 USGS *Bedrock Geologic Map of the Waterbury Quadrangles*, the Site is underlain by the *Hitchcock Lake Member* of the *Hartland Formation*, described as an assemblage of quartz feldspathic granulites and micaceous feldspar-quartz gneisses and schists. Bedrock in the North Parcel is shallow with observed exposed outcroppings. Bedrock in the South Parcel has been encountered at depths of approximately 40 to 60 feet.

4. IM Objectives

4.1 Soil Standards

Soil Sample results are compared to three remediation standards: residential direct exposure criteria (RES DEC), industrial commercial direct exposure criteria (I/C DEC) and pollutant mobility criteria for GB areas (GB PMC).

Direct exposure criteria address risk exposure based on exposure to contaminated material by routes of ingestion, inhalation, or dermal absorption. Both RES DEC and I/C DEC standards are applicable until an Environmental Land Use Restriction (ELUR) has been instituted for the Site. In consideration of the long history of industrial use at the first parcel of the site, it is likely that I/C DEC with an ELUR will be the target remediation level for the South Parcel. In the interest of future productive re-use of the Northern Parcel, RES DEC will be used for comparison when implementing this IM work plan for AOC A –Soil Pile removal.

The GB PMC provide a threshold concentration of a constituent above which concentrations could theoretically leach out and impact groundwater in a GB classified area. The leaching of metals is of particular concern for the Site. Mass concentrations of a metal detected at 20 times the GB PMC prompted additional analysis for synthetic precipitate leaching procedure (SPLP). The results of the SPLP analysis are provided when performed as a comparison to the GB PMC.

4.2 Groundwater Standards

Applicable criteria under the Connecticut Remediation Standard Regulations (RSRs) for areas where groundwater is classified as “GB” includes the Surface Water Protection (SWPC), Residential Groundwater Volatilization Criteria (RES GWVC) and Industrial/Commercial Groundwater Volatilization Criteria (I/C GWVC).

The SWPC stipulates that the average concentration of contaminants within a groundwater plume which discharges to a surface water body, or the concentration of contaminants within the portion of the plume immediately up-gradient of the surface water body, must be lower than the SWPC for that specific constituent. The SWPC criteria provided for comparison are the non-site specific criteria presented in the RSRs.

A site-specific SWPC was calculated by LEA (LEA, 2005). The site-specific SWPC contains a dilution factor of 41.7. Under RSR guidance, each published SWPC non-site specific constituent can be multiplied by the dilution factor to attain groundwater cleanup.

Comparison of the groundwater analytical data was also made to the RES GWVC and I/C GWVC within the document, *Proposed Revisions, Connecticut's Remediation Standard Regulations, Volatilization Criteria*, prepared by the Permitting, Enforcement and Remediation Division, Bureau of Water Management, CTDEP, dated March 2003. The Volatilization Criteria were developed to address the potential for Volatile Organic Compounds (VOCs) volatilized from groundwater to migrate through the unsaturated zone to the ambient air at concentrations that would pose an unacceptable risk to occupants in a building. The RES GWVC and I/C GW VC were evaluated since there are currently no ELURs instituted at the Site.

5. IM Description

5.1 Description of IM

The AOC A-Soil Piles are located on Northern Parcel along the northwest edge of the cap. There are approximately ten to fifteen soil piles that range from eight to twelve feet in diameter and three to six feet in height. Current photographs and approximate location and size of the AOC A -Soil Piles is included in Figure 1.

5.2 Remediation Process

The limits of soil are approximate; actual limits will be based on Site observations and confirmation sampling results. Each AOC-A Soil Pile will be excavated to a depth of approximately 6 inches below ground surface. The soil will be direct loaded into trucks staged on the asphalt cap. The loaded soils will be immediately transported to an approved facility. No engineered controls will be required for soil loading other than sweeping of any soil spilled on the asphalt.

The impacted soil is not a hazardous or toxic waste under Connecticut's regulations; therefore, it would be suitable for treatment at a thermal desorption facility or disposal in a solid waste facility.

The remediation process will include the following:

- The Site will be cleared of brush, trees, and vegetation as necessary in the remediation areas.
- Excavation and off-site disposal of the impacted soil.
- Confirmation sampling will verify the limits of the excavation comply with the RSRs.
- Site restoration as per design and contract documents (including topsoil and erosion sediment control).
- Post-remediation and post-closure groundwater monitoring and maintenance

Remedial actions are scheduled to occur the week of December 14, 2009. These implementation issues are explained in more detail in Section 7.

5.3 Confirmation Sampling and Analysis

5.3.1 Requirements

Specific confirmation sampling is not required because the soils are not considered hazardous waste; however, we recommend the following to insure all contaminated soils have been removed.

Confirmation samples will be collected from the excavation bottom at the rate of one sample per 250 ft²

5.3.2 Procedures

Samples collected for confirmation purposes will be obtained from the excavation sidewalls using manual sampling methods. The typical equipment requirements and collection procedures used to sample soil are described below.

- Stainless steel (SS) or disposable plastic trowels, spoons, or scoops
- SS spade or hand auger
- SS bowls
- Sample containers (provided by the laboratory)

Soil samples will be collected according to the following procedures. Changes to these procedures must be justified and recorded in the field logbook.

- Decontaminate sampling equipment.
- Record the weather conditions and other notable Site conditions.
- Collect the sample from the excavation sidewall at the prescribed depth intervals (that are most likely to be contaminated based on field observations) using the SS equipment noted above and place into a SS bowl. Collect VOC sample and then homogenize the sample. Fill the appropriate sample container for the analyte(s) required.
- Samples for analysis of VOCs will not be homogenized, composited, or mixed. These samples will be placed into sample containers as quickly as possible with minimal disturbance. Sample containers will be filled to minimize headspace.
- Label and refrigerate the sample

- Stake the sample location and label and record in the logbook as indicated below.
- Sketch and record the sampling locations on the site map and in the field notebook. Photograph the sampling location and conditions.
- Submit the sample to the laboratory under chain-of-custody protocol.

5.3.2 Quality Assurance/Quality Control (QA/QC)

QA/QC procedures will be followed according to the EPA approved Quality Assurance Project Plan (QAPP) for the site. A copy of the QAPP is on file with the EPA and the DEP.

5.3.2.1 Field Blanks

The approved QAPP states that one field blank will be submitted per day per cooler.

5.3.2.2 Equipment Blanks

Equipment blanks are to be performed on non-dedicated sampling equipment. Equipment blanks will be collected after decontamination of the equipment used to collect soil samples.

5.3.2.3 Trip Blanks

The approved QAPP states that one trip blank will be submitted per day per cooler.

5.4 Groundwater Monitoring

Following soil remediation, post-remediation groundwater monitoring will be performed but not until the remediation of the remainder of AOC-A is complete (anticipated during spring 2010). Groundwater quality compliance will be achieved when:

- SWPC compliance is achieved
- RES GWVC compliance is achieved

For this GB groundwater classification area, a compliance groundwater monitoring program will be prepared following soil remediation. The compliance groundwater monitoring program will demonstrate that groundwater is below the applicable RSR and the soil remediation was effective.

The two existing wells (MW-101 and MW-102) will be used for routine monitoring following the soil pile remediation. If existing wells are destroyed during remediation, they will be replaced. The IM Work Plan for the remediation of the remainder of AOC A will propose the former compliance ground water monitoring program.

Groundwater sampling will be conducted using low-flow sampling methods consistent with the QAPP.

6. Remediation Implementation

6.1 Notification

Public notice of this remediation is pursuant to Section II.B.11 of the Stewardship Permit and CGS 22a-134(a). This public notice will include the following:

- Copy of the notice to the Director of Health of the municipality is located
- Copy of the notice to all persons on the facility mailing list maintained pursuant to 40 CFR 124.10(c)(1)(ix)
- A sign at least 6 feet by 4 feet for a least 30 days in a legible condition at the facility, clearly visible from the public and includes the words "ENVIRONMENTAL CLEAN-UP IN PROGRESS AT THIS SITE. FOR FURTHER INFORMATION CONTACT", including telephone number in which any interested person may obtain additional information about the remediation.

6.2 Permits and Approvals

All local zoning or building permits will be obtained prior to the start of remedial actions. Because this is a simple excavation of existing above-grade piles no local permits are anticipated.

6.3 Regulatory Compliance

The remediation contractor will be responsible for compliance with all local, state, and federal laws and regulations.

6.4 Health and Safety

The remediation contractor will prepare a Health and Safety Plan (HASP) to meet the OSHA requirements for the site remediation activities. Soil and groundwater chemicals present at this Site are summarized in this report. Emergency contact information will be detailed in the HASP and a list of these contacts will be posted at the Site.

6.5 Soil Storage

The soil piles will be direct loaded on Site for immediate transport, it is not anticipated that soils will be stored in any location other than where they are currently located.

6.6 Waste Management

The remediation contractor will be required to use licensed and properly permitted treatment and/or disposal facilities (TSDF) for contaminated soils subject to review and approval by MacDermid and its representatives.

6.7 Groundwater Dewatering

Groundwater dewatering is not anticipated to be required to implement the remedial actions described in this plan. If groundwater dewatering is required for the completion of this project, provisions for the proper disposal of groundwater will be followed and the Contractor will be required to obtain the necessary permits from CTDEP for its discharge or ship it off Site to a permitted TSDF.

6.8 Contractor Work Plan

The remediation contractor will be required to prepare a work plan specifying the sequencing and schedule of site remediation activities, excavation, and loading methods. This will include safety procedures, alternate disposal facilities and permits, and site remediation methods. The Contractor's Work Plan will incorporate the requirements of this RAP, and the RAP will supersede any conflicting requirements that may be included in the Contractor's Work Plan.

6.9 Erosion and Sediment Control

The remediation contractor will implement best management practices relative to soil erosion and sedimentation control, which will be in accordance with the CTDEP and City of Waterbury requirements. It is anticipated that silt fencing or hay bales on the down-slope areas of excavation are all that will be needed.

6.10 Decontamination

The existing asphalt pad will be used for direct loading by the excavation. The trucks will not enter the disturbed soil and any soil spilled on the truck will be swept off to the asphalt where it will be collected for disposal. At the end of the project the excavator will be decontaminated on the asphalt pad.

6.11 Site Restoration

All disturbed areas will be graded and seeded to establish a stable vegetative cover. Clean fill will be added as needed to restore the grade to the asphalt cap..

6.12 IM Documentation

A remediation contractor will be selected by MacDermid to implement this IM Work Plan and the contract documents. MacDermid will contract directly with the remediation contractor. The remedial contractor will report to MacDermid through GEI Consultants, Inc.

6.12.1 Field Oversight

This activity will be conducted by GEI.

- Ensure compliance with the IM Work Plan, including obtaining of remediation goals.
- Maintain accurate accounting of material disposed off Site.
- Collect and analyze all confirmation samples.
- Maintain records of remediation excavations, observations, photographs, sampling, analysis, and screening documentation (logs, locations, elevation); and pertinent observations.
- Monitor compliance with all permits/approvals in place and report deficiencies to the Contractor for corrective action.
- Completion of a daily report that documents the activities, soil disposal and management activities, and personnel/visitors at the site.

6.12.2 IM Report

An IM Report is required to be submitted to the CTDEP within (90) calendar days of completion of this IM Work Plan, excluding the post-remediation groundwater monitoring. The IM Report will contain at minimum:

- A description of the interim measures implemented.
- Summaries of results
- Summaries of all problems encountered
- Summaries of accomplishments and/or effectiveness of interim measures
- Copies of all relevant laboratory/monitoring data etc., in accordance with the Stewardship Permit

7. Schedule

Implementation of this IM Work Plan is scheduled to occur the week of December 14, 2009.

Table

Table 1
Summary of Soil Pile Sampling - AOC A
Interim Measures Work Plan
MacDermid Incorporated
526 Huntingdon Avenue
Waterbury, Connecticut

Validated

| Sample Name: Sample Date: Area of Concern | RES DEC | I/C DEC | GB PMC | SB-1 11/12/2008 AOC-A | SB-2 11/12/2008 AOC-A | SB-3 11/12/2008 AOC-A | SB-4 11/12/2008 AOC-A | SB-5 11/12/2008 AOC-A |
|---|----------|-----------|--------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| VOCs (mg/kg) | | | | | | | | |
| Acetone | 500 | 1000 | 140 | 0.016 U | 0.014 U | 0.91 U | 0.022 U | 0.03 |
| Benzene | 21 | 200 | 0.2 | 0.0068 U | 0.0063 U | 0.0019 U | 0.0056 U | 0.0052 U |
| Bromomethane | 95 | 1000 | 2 | 0.0068 U | 0.0063 U | 0.0022 U | 0.0056 U | 0.0052 U |
| Butanone, 2- | 500 | 1000 | 80 | 0.014 U | 0.013 U | 0.33 U | 0.011 U | 0.01 U |
| Chloroethane | SS-210 | NE | NE | 0.0068 U | 0.0063 U | 0.0032 U | 0.0056 U | 0.0052 U |
| Dichloroethene, cis-1,2- | 500 | 1000 | 14 | 0.0068 U | 0.0063 U | 0.048 U | 0.0056 U | 0.0074 |
| Hexanone, 2- | NE | NE | NE | 0.014 U | 0.013 U | 0.077 U | 0.011 U | 0.01 U |
| Methylene chloride | 82 | 760 | 1 | 0.027 U | 0.025 U | 0.023 U | 0.022 U | 0.021 U |
| Toluene | 500 | 1000 | 67 | 0.0068 U | 0.0063 U | 0.0018 U | 0.0056 U | 0.0052 U |
| Trichloroethene | 56 | 520 | 1 | 0.0068 U | 0.0063 U | 0.0058 UJ | 0.0056 U | 0.007 |
| PCBs (mg/kg) | | | | | | | | |
| Aroclor 1260 | 1 | 10 | NE | NA | NA | NA | NA | 0.04 |
| Total Metals (mg/kg) | | | | | | | | |
| Antimony | 27 | 8200 | NA | 1.9 U | 4.8 U | 4.7 U | 10 U | NA |
| Arsenic | 10 | 10 | NA | 13.4 | 24.9 | 16.8 | 5.5 | NA |
| Barium | 4700 | 140000 | NA | 81.5 | 198 | 87.1 | 52 | NA |
| Beryllium | 2 | 2 | NA | 0.62 U | 0.56 U | 0.44 U | 0.5 JU | NA |
| Cadmium | 34 | 1000 | NA | 5.7 U | 7.4 U | 1.2 U | 5 U | NA |
| Chromium | 3900/100 | 51000/100 | NA | 311 | 392 | 2130 | 30.6 | NA |
| Cobalt | 70 | NE | NA | 9.2 U | 11.5 U | 16.5 U | 6.6 | NA |
| Copper | 2500 | 76000 | NA | 465 | 637 | 716 | 115 | NA |
| Lead | 400 | 1000 | NA | 671 | 1220 | 802 | 42.2 | NA |
| Mercury | 20 | 610 | NA | 0.24 | 0.24 | 0.13 | 0.065 | NA |
| Nickel | 1400 | 7500 | NA | 98.6 | 89.5 | 227 | 23.4 | NA |
| Selenium | 340 | 10000 | NA | 3.1 U | 3.7 U | 3.7 U | 1.1 U | NA |
| Silver | 340 | 10000 | NA | 3.4 U | 4.4 U | 0.51 U | 3 U | NA |
| Vanadium | 470 | 14000 | NA | 21.8 | 24.5 | 30.7 | 22.1 | NA |
| Zinc | 20000 | 610000 | NA | 259 | 238 | 138 | 134 | NA |
| TCLP METALS (mg/l) | | | | | | | | |
| Arsenic | NA | NA | 0.1 | NA | NA | NA | NA | 0.2 U |
| Barium | NA | NA | 10 | NA | NA | NA | NA | 0.25 |
| Cadmium | NA | NA | 0.05 | NA | NA | NA | NA | 0.05 U |
| Chromium | NA | NA | 0.5 | NA | NA | NA | NA | 0.016 U |
| Lead | NA | NA | 0.15 | NA | NA | NA | NA | 0.45 |
| Mercury | NA | NA | 0.02 | NA | NA | NA | NA | 0.002 U |
| Selenium | NA | NA | 0.5 | NA | NA | NA | NA | 0.15 U |
| Silver | NA | NA | 0.36 | NA | NA | NA | NA | 0.03 U |
| Total Cyanide (mg/kg) | | | | | | | | |
| Cyanide, Total | 1400 | 41000 | 2 | 0.13 U | 0.2 U | 0.1 U | 0.097 U | NA |
| Disposal | | | | | | | | |
| Ignitibility (mm/sec) | NE | NE | NE | NA | NA | NA | NA | neg |
| Temperature at Analysis (deg f) | NE | NE | NE | NA | NA | NA | NA | 1960 |
| pH (S.U.) | NE | NE | NE | NA | NA | NA | NA | 6.22 |
| Other | | | | | | | | |
| CT ETPH (mg/kg) | 500 | 2500 | 2500 | 1300 | 2600 | 14,000 | 260 | 2100 |

Table 1
Summary of Soil Pile Sampling - AOC A
Interim Measures Work Plan
MacDermid Incorporated
526 Huntingdon Avenue
Waterbury, Connecticut

Notes:

mg/kg - milligrams/kilogram or parts per million (ppm)

mg/l - milligrams per liter (ppm)

mm/sec - millimeters per second

VOCs - Volatile Organic Compounds

PCBs - Polychlorinated Biphenyls

TCLP - Toxicity Characteristics Leaching Procedure

deg f - degrees Fahrenheit

S.U. - Standard Units

RES DEC - Residential direct exposure criteria means the concentrations identified as residential direct exposure criteria in Appendix A to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies.

I/C DEC - Industrial/commercial direct exposure criteria means the concentrations identified as industrial/commercial direct exposure criteria in Appendix A to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies.

GB - means an area where the ground-water classification is GB

PMC - Pollutant mobility criteria means the concentrations identified in Appendix B to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies or any alternative pollutant mobility criteria approved by the Commissioner pursuant to subsection 22a-133k-2(d) of the Regulations of Connecticut State Agencies.

NA - not applicable

NE - not established

SS - if statewide criteria have not been established, but site specific criteria are available, this is denoted by the prefix "SS" and the most conservative site specific value are listed.

Bolding indicates a detected result value

Yellow shading indicates exceedance of residential direct exposure criteria

Gray shading indicates exceedance of industrial/commercial direct exposure criteria

Green shading indicates exceedance of groundwater pollutant mobility criteria

Validation Qualifiers:

J - indicates estimated value

U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis

Figure

7



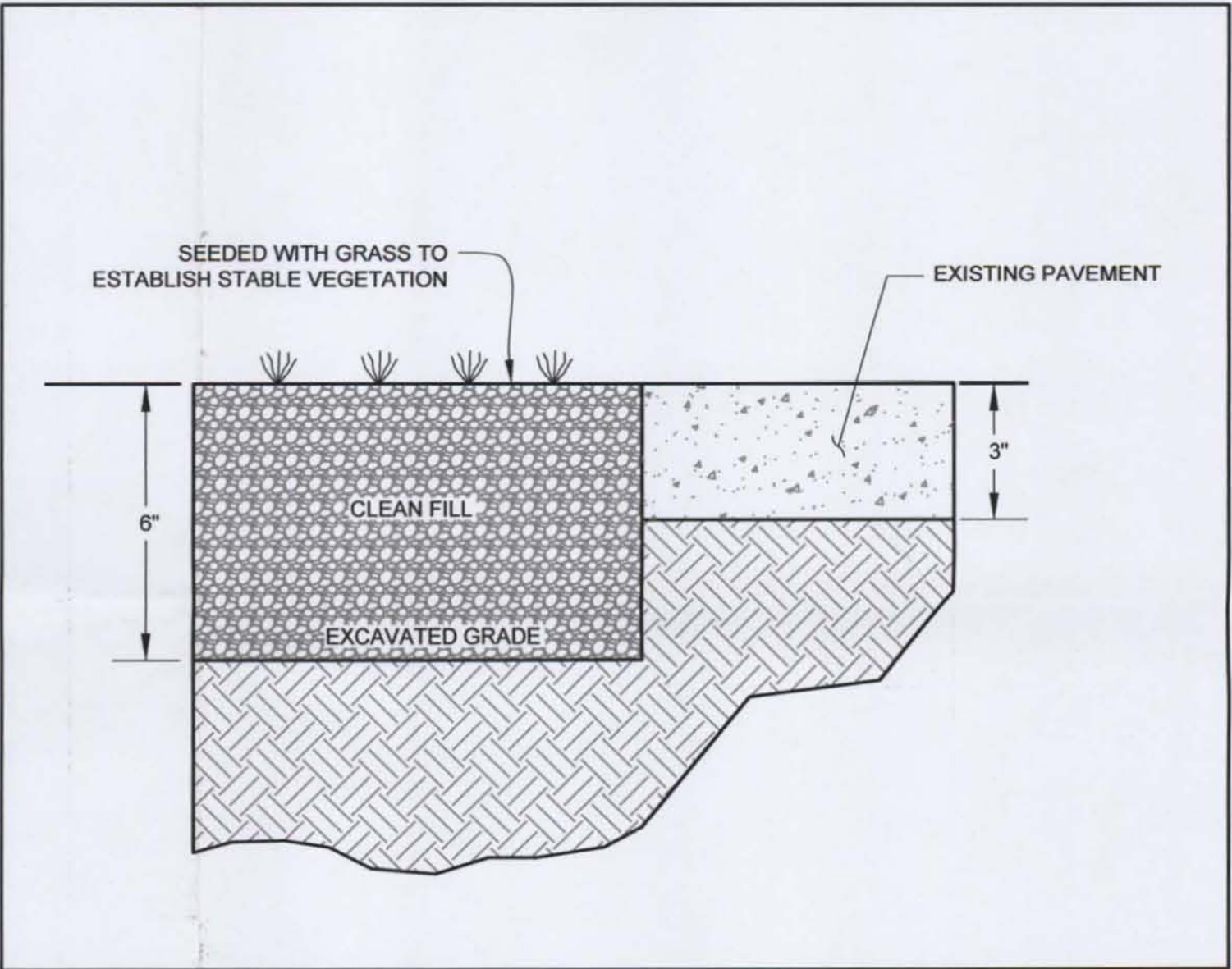
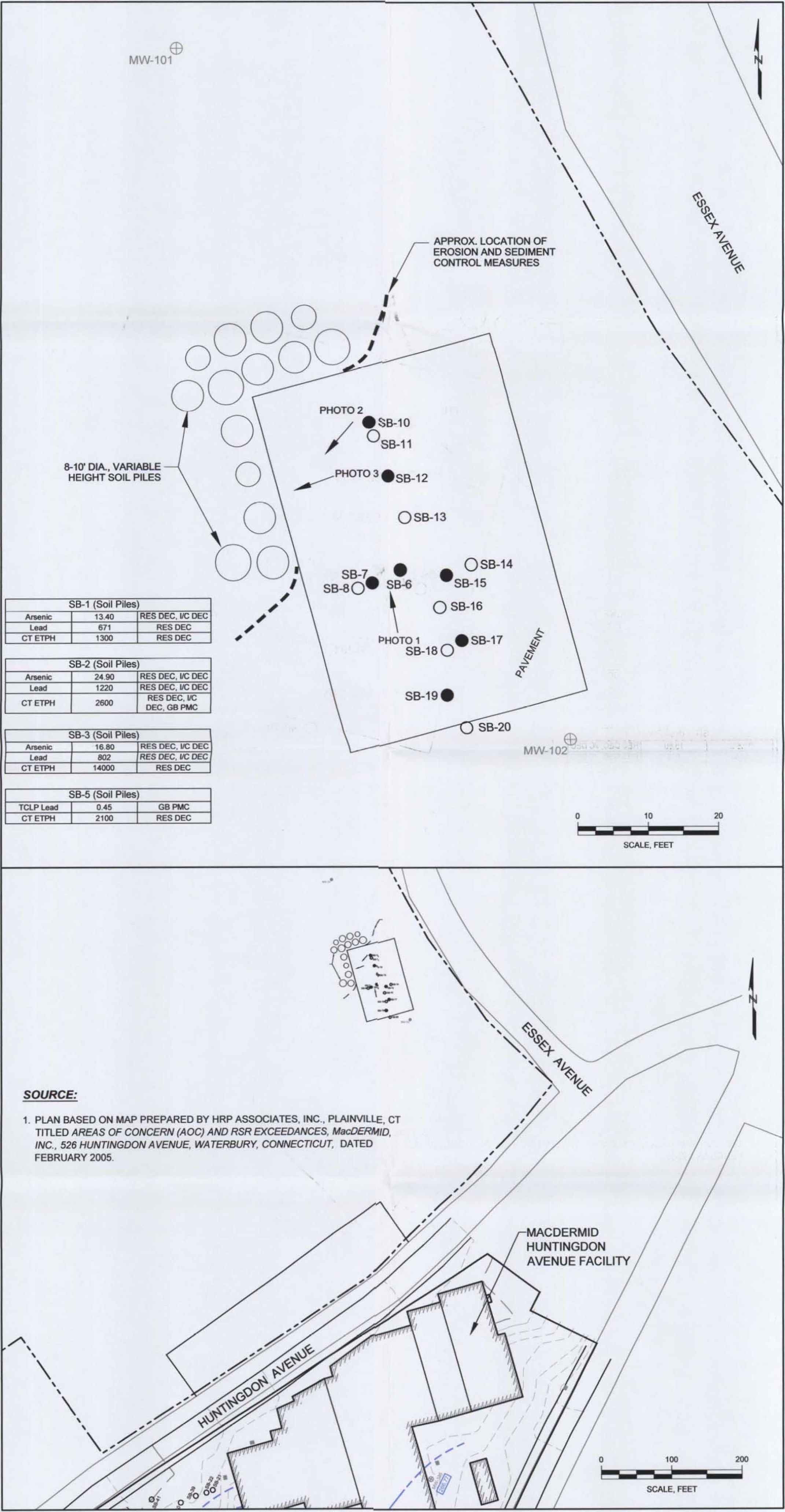
PHOTO 1



PHOTO 2



PHOTO 3



SITE RESTORATION DETAIL
NOT TO SCALE

- LEGEND**
- SB-10 SOIL BORING WITH SAMPLE COLLECTED
 - SB-11 SOIL BORING NO SAMPLE COLLECTED
 - ⊕ MW-101 MONITORING WELL

MacDERMID, INC.
526 HUNTINGDON AVENUE
WATERBURY, CONNECTICUT

MacDERMID, INC.
WATERBURY, CONNECTICUT

PROJECT 073290-1004

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CONNECTICUT 06033

**INTERIM MEASURES
WORK PLAN
AOC-A-SOIL PILES**

November 2009